

Patent Claims:

1. A process for the continuous preparation of mixtures from at least two components, encompassing the steps of:
 - 5 a) charging the individual components to storage vessels,
 - b) introducing each individual component by way of a conveying device for that component into a mixing device,
 - 10 c) varying the conveying rate of at least one conveying device in such a way that this conveying rate varies periodically between a lower and an upper limiting value, and
 - d) mixing the individual components in the mixing device.
- 15 2. The process as claimed in claim 1, wherein the variation of the conveying rate of one conveying device continuously rises or falls, and wherein the variation in the conveying rate of all of the other conveying devices is periodic.
- 20 3. The process as claimed in claim 1, wherein the variation of the conveying rate of various conveying devices is periodic and wherein the frequencies of the variations differ from one another.
- 25 4. The process as claimed in claim 1, wherein the variation of the conveying rate of at least one conveying device, preferably of all of the periodic variations, corresponds to a sawtooth function or a sine function, the periods thereof preferably being constant over time.
- 30 5. The process as claimed in claim 1, wherein the variation of the conveying rate of at least one conveying device corresponds to a periodic step function whose periods and step intervals are preferably constant over time.
- 35 6. The process as claimed in claim 1, wherein the periods or step intervals for the variation of the conveying rates of the individual conveying devices are an integral multiple of a base period, where the ratio of any two desired periods or step intervals for the variation of the conveying rate of the conveying devices, or the ratio of a period and a step interval for the variation of the conveying rate of

two conveying devices, is preferably equal to half of a whole number, and is in particular 0.5, or 1.5, or 2.5.

- 5 7. The process as claimed in claim 1, wherein the frequency ratio of two periodic variations of the conveying rate of two conveying devices is proportional to the compositional resolution desired.
- 10 8. The process as claimed in claim 1, wherein the total conveying rate of all of the conveying devices is constant over time.
- 15 9. The process as claimed in claim 1, wherein at least one component is a liquid, a conveyable solid, and/or a gas.
- 20 10. The process as claimed in claim 9, wherein at least one component is a polymer melt, and wherein at least one other component is an additive.
- 25 11. An apparatus for carrying out the process as claimed in claim 1, encompassing the following units:
- 30 i) storage vessels for each individual component of the mixture to be prepared,
- ii) mixing device for mixing all of the components of the mixture to be prepared;
- 35 iii) lines for the individual components, leading from each individual storage vessel to the mixing device;
- iv) in every line for every individual component, conveying devices whose conveying rate can be set individually; and
- v) control device for the conveying devices, which controls the conveying rate of each conveying device independently of the others, and which sets the conveying rate of at least one conveying device variably and periodically between a predetermined lower limiting value and a predetermined upper limiting value.
- 40 12. The apparatus as claimed in claim 11, wherein the mixing device is a static mixer.

13. The apparatus as claimed in claim 11, wherein the mixing device is a screw extruder.
- 5 14. The use of the process as claimed in claim 1 for producing substance libraries for high-throughput screening and other combinatorial methods.
- 10 15. The use as claimed in claim 14, wherein moldings are produced, preferably in the form of film strips, extrudates, or pellets produced from these extrudates.
- 15 16. The use as claimed in claim 15, wherein the molding is an extrudate or an unsupported film strip, from which discrete fractions are produced by chopping or stamping, or by pelletizing.